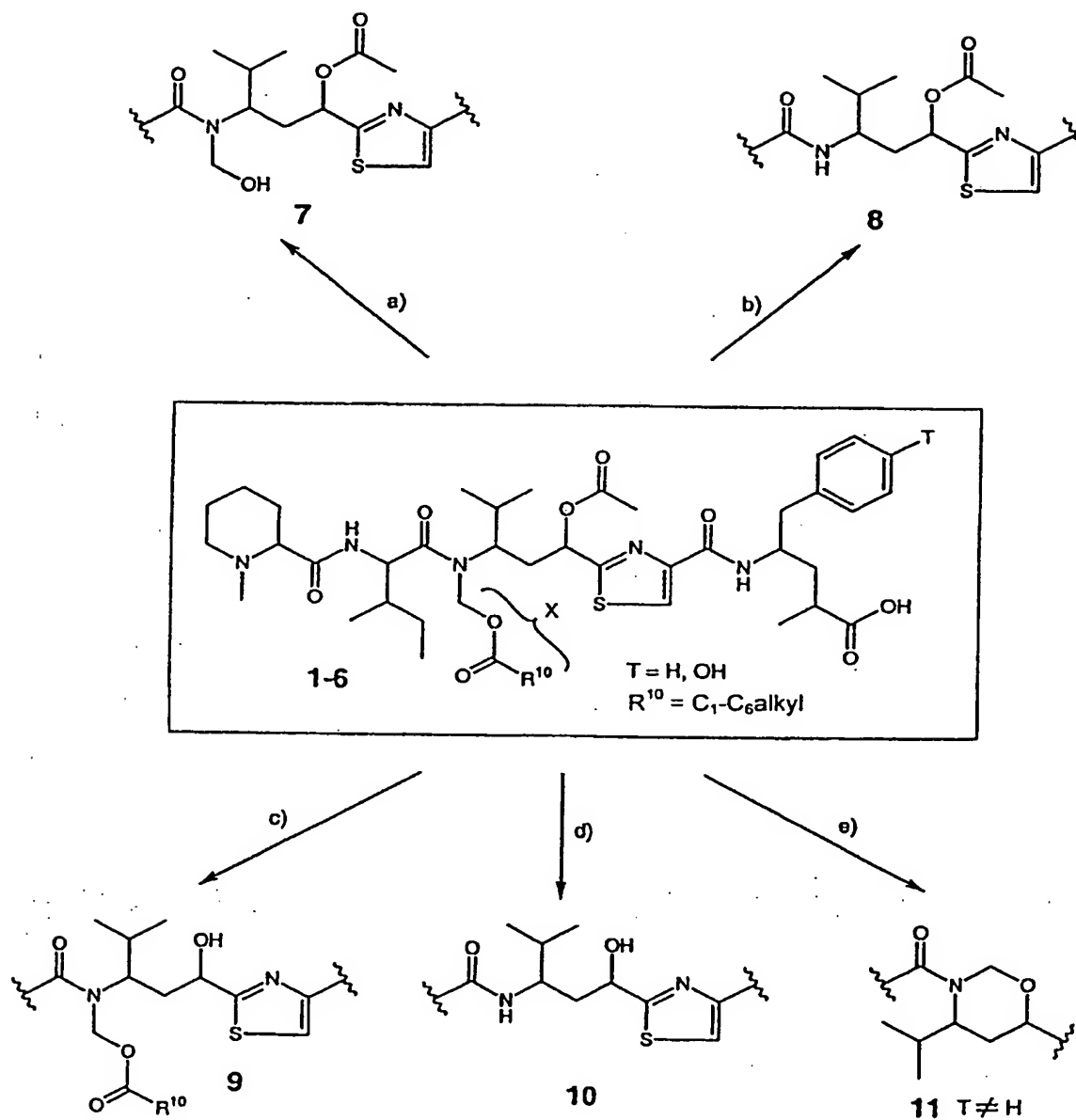


1/9

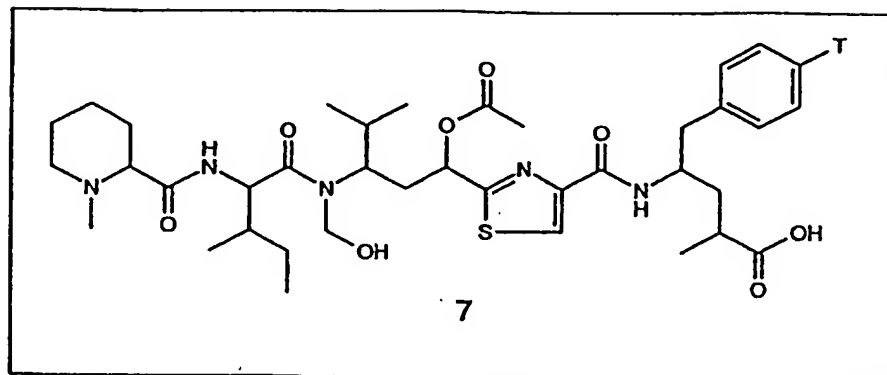
Figure 1



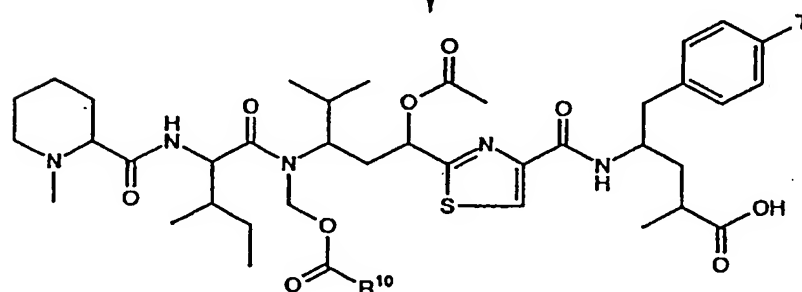
a) 0.1 M HCl, dioxane, 50°C; b) 0.1 M HCl, 100°C; c) NH_3 , MeOH; d) 1 M NaOH, MeOH; e) 0.5 M HCl, 100°C

2/9

Figure 2

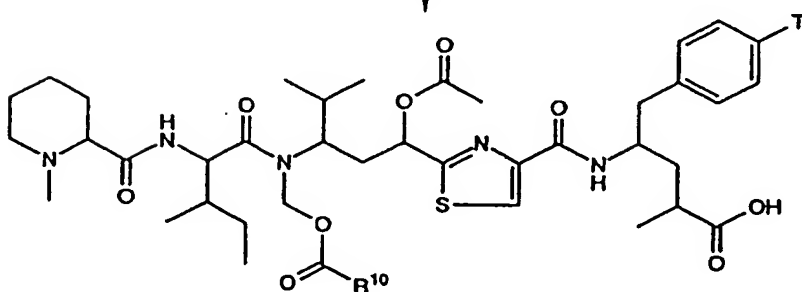


a)



T = H, OCOR⁵
R¹⁰ = C₁-C₆alkyl, C₁-C₆alkenyl, aryl, heteroaryl

b)

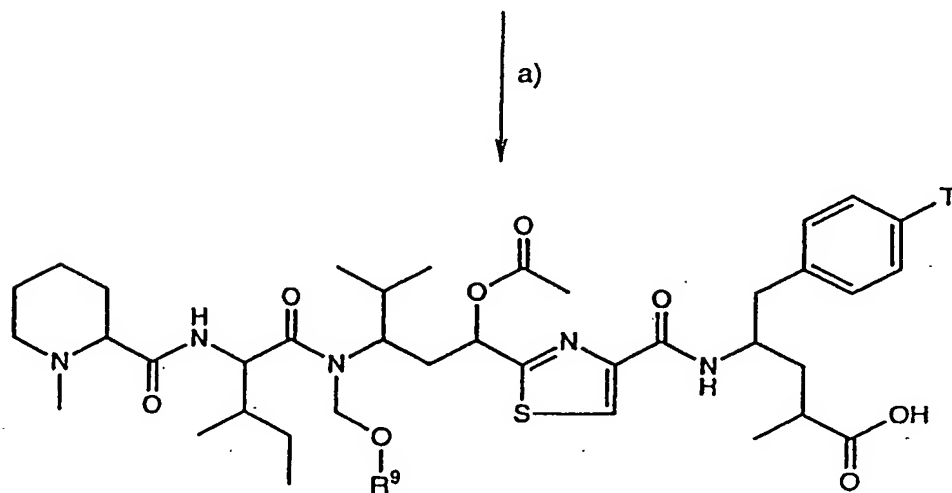
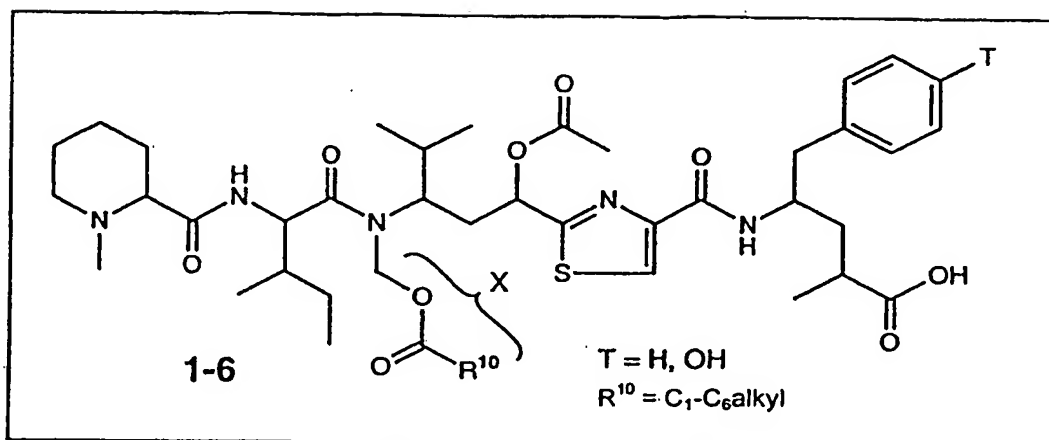


T = H, OH
R¹⁰ = C₁-C₆alkyl, C₁-C₆alkenyl, aryl, heteroaryl

a) R¹⁰COCl, Et₃N; b) NH₃

3/9

Figure 3

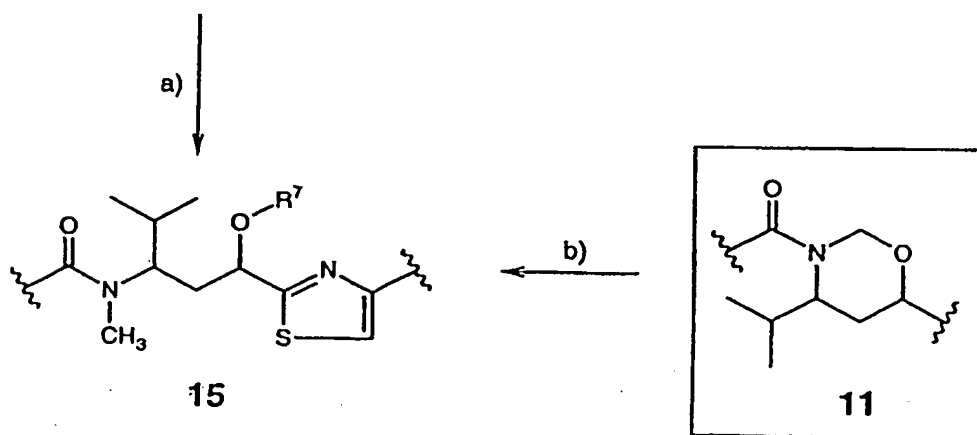
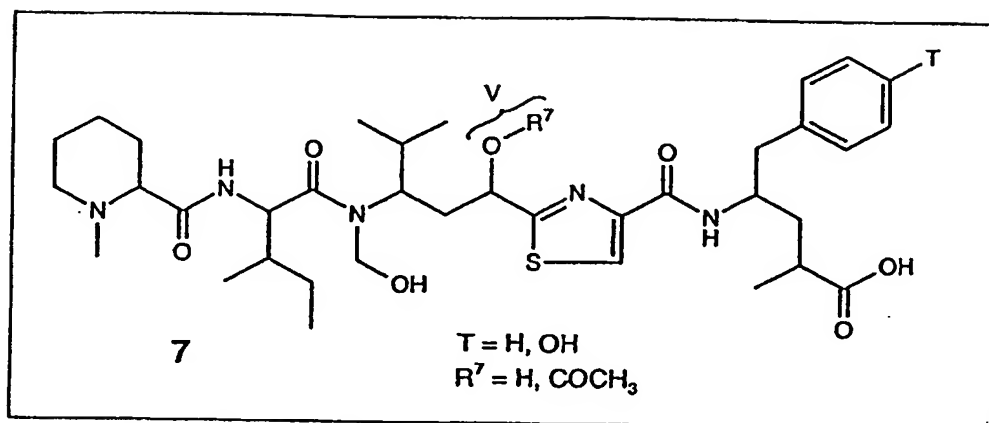


14 $R^9 = C_1-C_4alkyl, alkenyl, aryl$

a) $p-CH_3-C_6H_4SO_2OH$, R^9OH , THF, 80°C

4/9

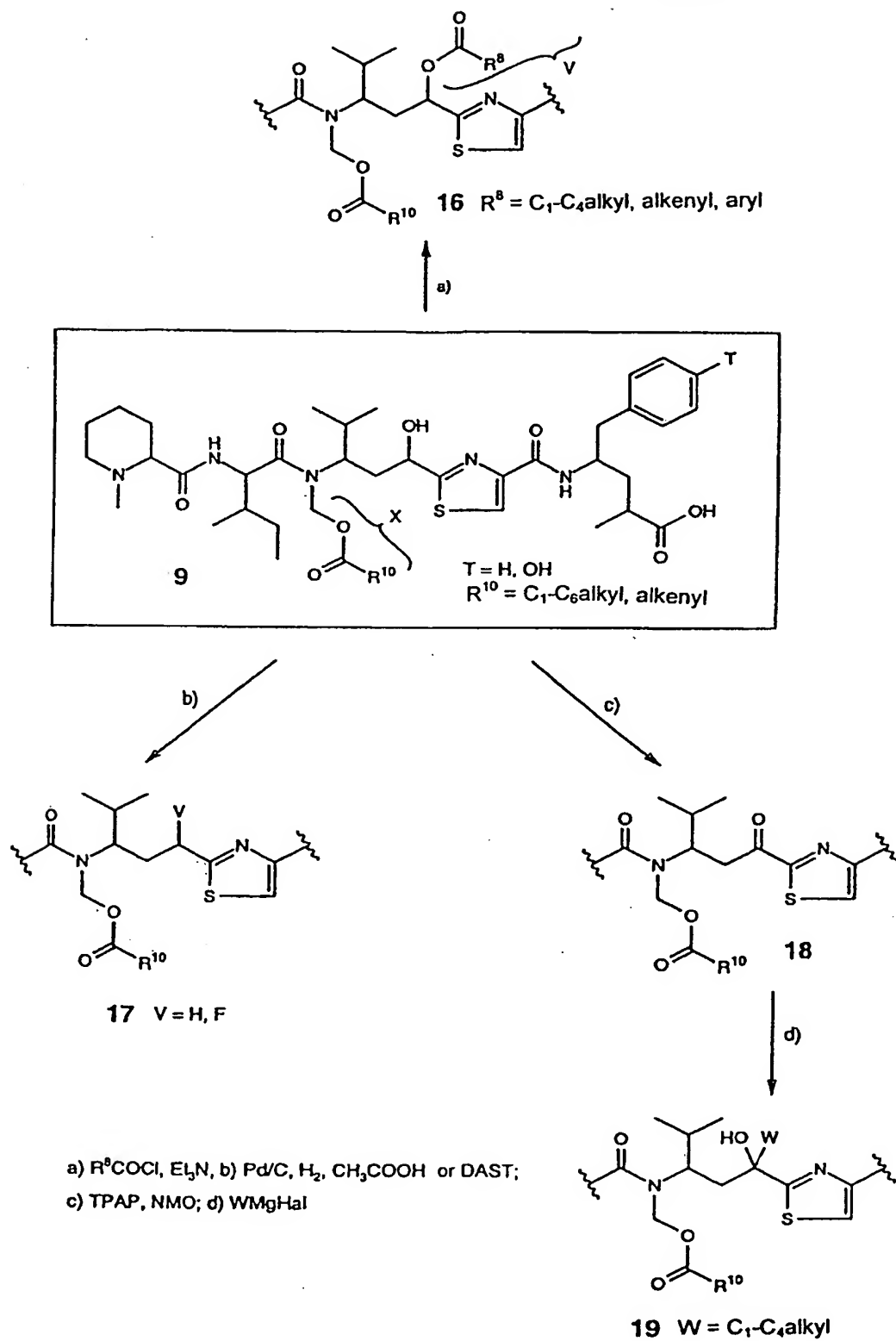
Figure 4



a) $NaCNBH_3$, TFA, MeOH; b) $NaCNBH_3$, Me_3SiCl , CH_3CN

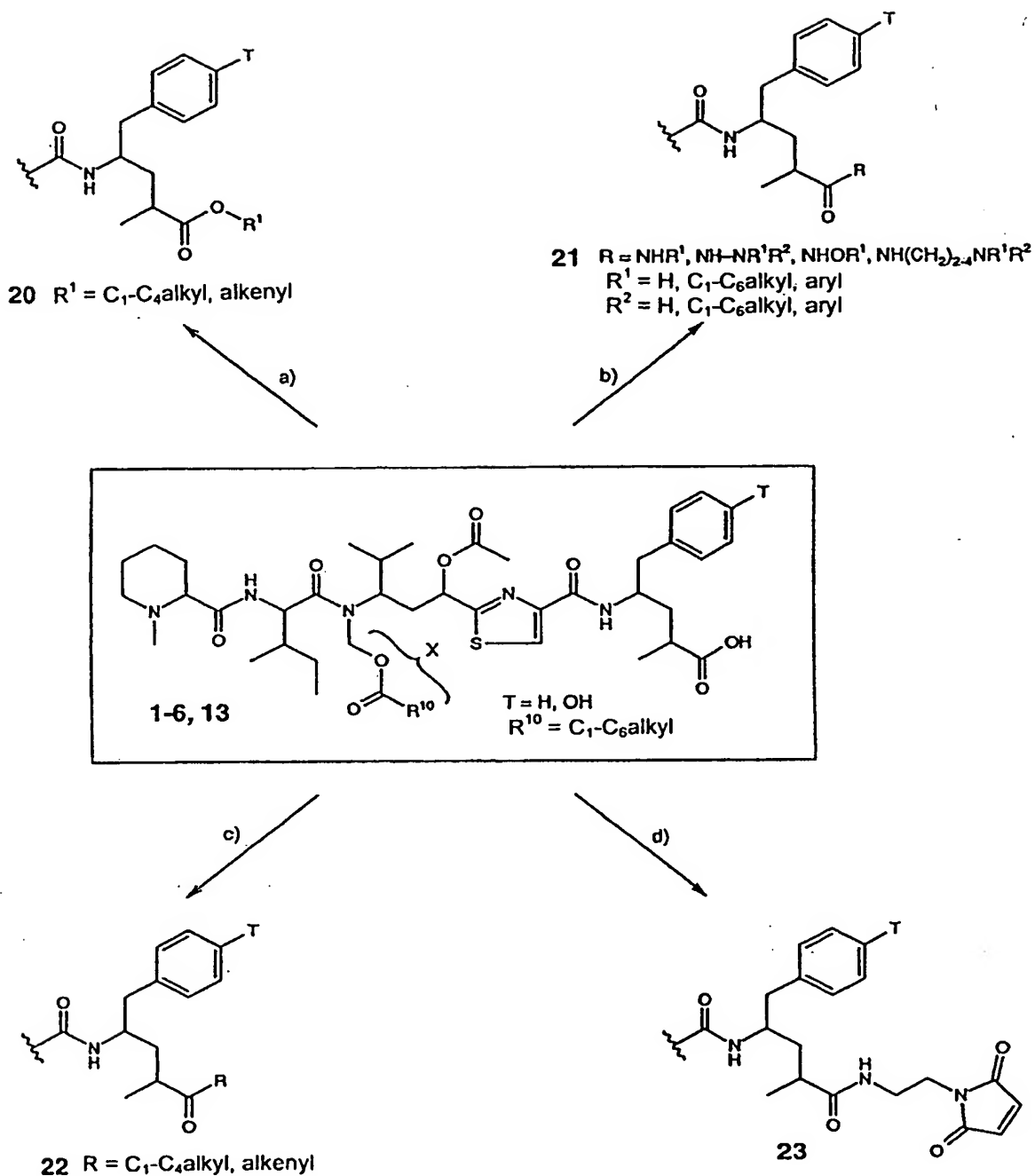
5/9

Figure 5



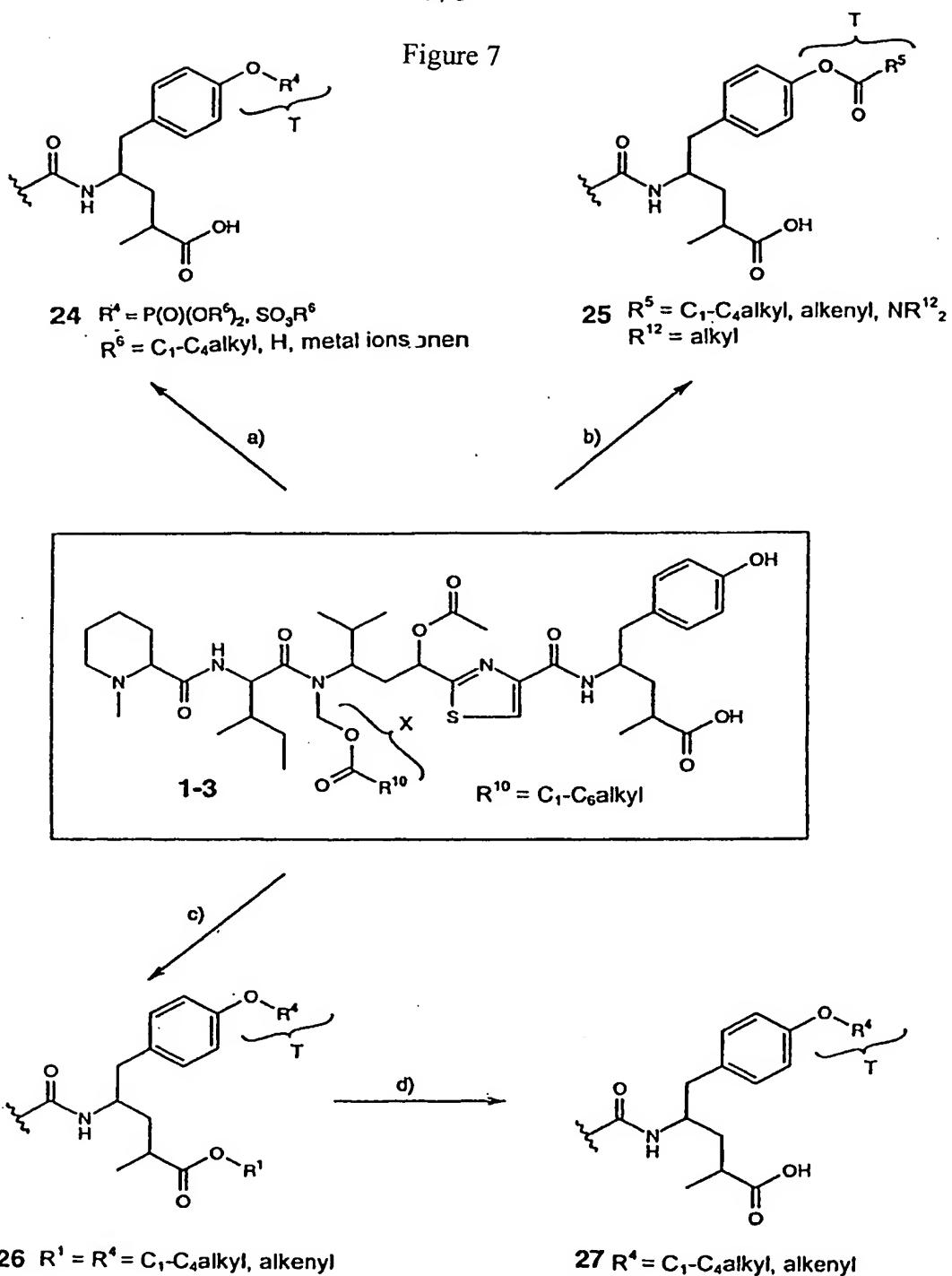
6/9

Figure 6



7/9

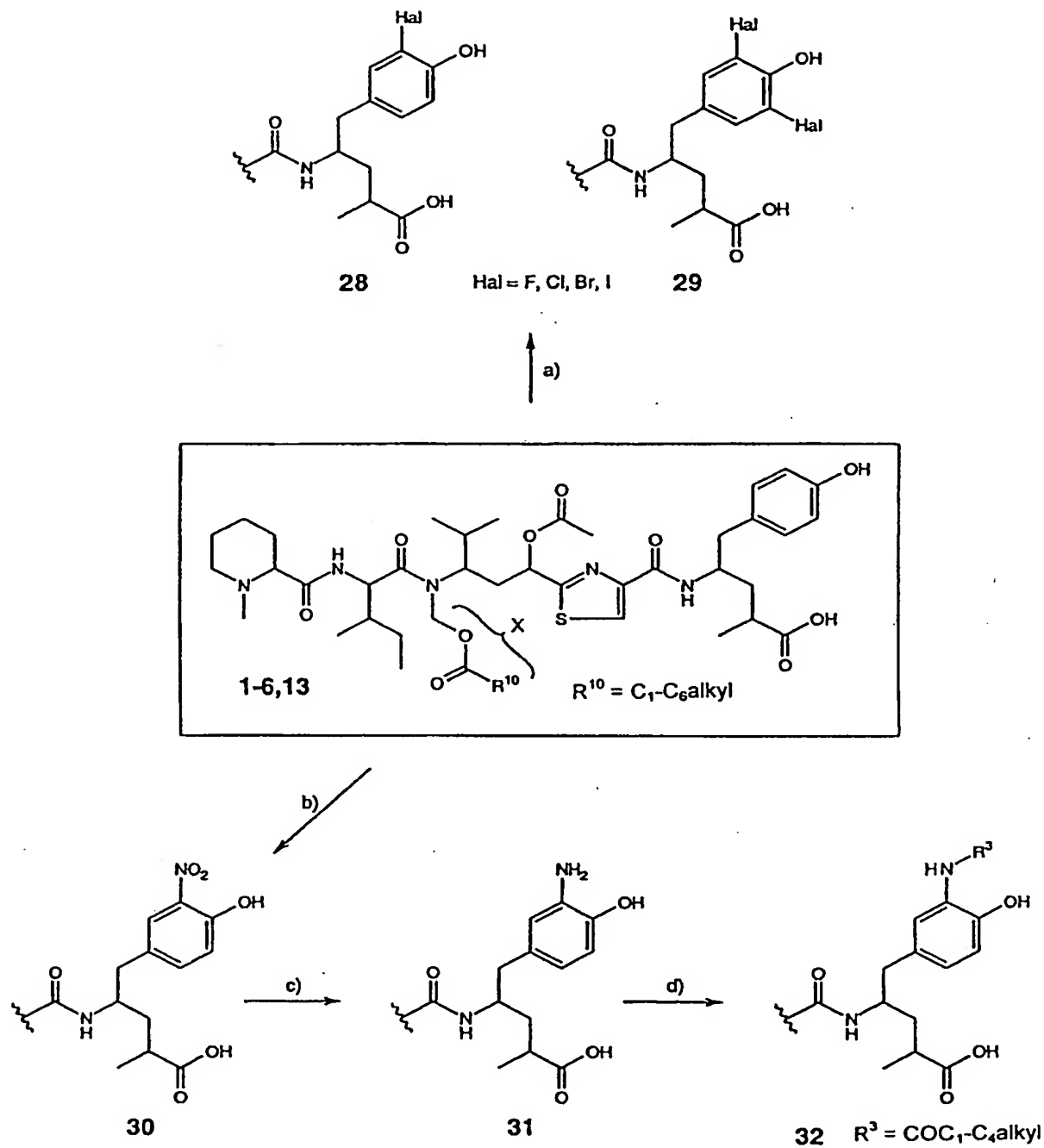
Figure 7



a) $P(O)(OR^5)_2OH$, I_2 , pyridine, CH_2Cl_2 or pyridine- SO_3 ; b) R^5COCl , Et_3N , $abs. THF$;
c) Ag_2O , R^1I , CH_2Cl_2 ; for $R^4 = CH_3$: CH_2N_2 , $MeOH$; d) pig liver esterase, KH_2PO_4 buffer, $36^\circ C$;

8/9

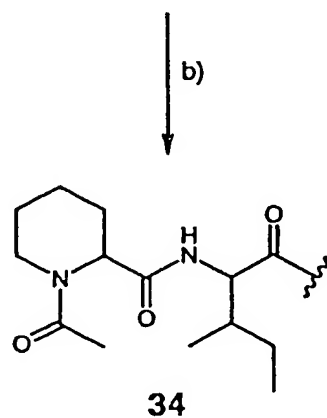
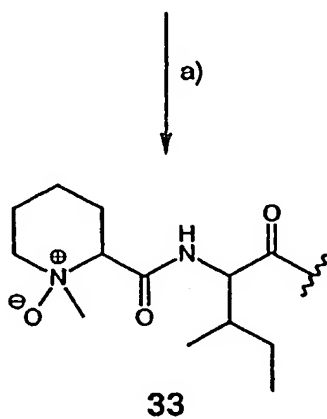
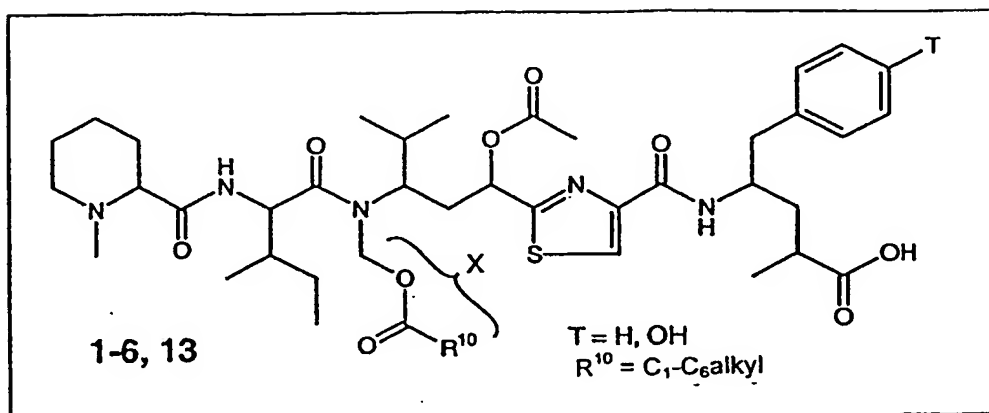
Figure 8



a) C_5Cl_5NF triflate, SO_2Cl_2 , NBS, ICl; b) $NaNO_2$, CH_3COOH , EtOH; c) Pd/C, H_2 , EtOH; d) $(R^3CO)_2O$

9/9

Figure 9



a) *m*-CPBA, CH_2Cl_2 ; b) Ac_2O , 75°C